APPLICATION OF PAINT
August 8, 1994

Description

All material classified as structural steel, except galvanized surfaces, shall be painted with an inorganic zinc silicate shop applied primer system and an epoxy, aliphatic urethane paint system applied after erection, cleaning, and spot priming. All steel surfaces not embedded in concrete, except stainless steel, shall be painted with three coats of paint. Steel surfaces embedded in concrete and faying (contact) surfaces of bolted field splices shall receive the prime coat only.

The work shall be done in accordance with the Standard Specifications and these Special Provisions. Terminology used herein is in accordance with the definitions used in Volume 2, Systems and Specifications of the SSPC Steel Structures Painting Manual, 1982 Edition.

Submittals

The Contractor shall submit the product data sheets to the Engineer for approval before any painting is done. The product data sheets shall include all application instructions including the mixing and thinning directions, the recommended spray nozzles and pressures, the minimum and maximum drying time between coats, friction coefficient of the faying surface, restrictions on temperature and humidity, and the repair procedures.

Manufacturer's Representative

For contracts in which more than 20,000 pounds of steel are to be painted, the manufacturer of the paint system shall have a technical representative present at the job site for the first day of painting. After the first day of painting the technical representative shall remain available for contact in the event of technical difficulties in applying the paint system.

Provisions For Inspection

During fabrication and shop painting, scaffolding shall be furnished and erected, meeting the approval of the Engineer, to permit inspection of the steel prior to and after painting.

Rubber rollers or other protective devices, meeting the approval of the Engineer, shall be used on scaffold fastenings. Metal rollers or clamps and other types of fastenings which will mar or damage freshly coated surfaces shall not be used.

Materials

Coating System

The Contractor shall select a complete coating system from one of the approved coating systems listed in the following Qualified Product List.

QUALIFIED PRODUCT LIST

Producer	Coats	Products
Ameron Protective	1st	Dimetcoat 9 (shop primer)
Coatings Division		or Amercoat 68A (field primer)
201 N. Berry St.	2nd	Amercoat 385
Brea, CA 92622-1020	3rd	Amercoat 450HS
	faying	Dimetcoat 9
	surface	
Carboline	1st	Carbo Zinc 11 (shop primer)
P.O. Box 1019		or Carboline 858 (field primer)
Mercer Island, WA	2nd	Carboline 893

98040	3rd	Carboline 133HB
	faying surface	Carbo Zinc 11
Devoe P.O. Box 7600 Louisville, KY 40257-0600	1st	Catha-coat 304 (shop primer) or Catha-coat 303H (field primer)
	2nd	Devran 224HS
	3rd	Devthane 359
	faying surface	Catha-coat 304
DuPont Suite 140 Four Kingwood Place 900 Rockmead Drive Kingwood, TX 77339	1st	Ganicin 347-Y-931 (shop primer) or Ganicin 347-Y-937 (field primer)
	2nd	Corlar 823HB
	3rd	Imron 326
	faying surface	Ganicin 347-Y-931
P.P.G. Industries 11300 NE 39th So. Suite A Vancouver, WA 98662	1st	Metalhide 1001 (shop primer) Aquapon 97-670 (field primer)
	2nd	Aquapon High Build, Semi-gloss Polyanide Epoxy
	3rd	Pitthane Acrylic-Aliphatic Urethane
	faying surface	Metalhide 1001
Porter Paint Co. 400 S. 13 St. Louisville, KY 40201 502-588-9200	1st	351 Zinc Lock (shop primer) or 308 Zinc Lock (field primer)
	2nd	4500 MCR High Build Epoxy
	3rd	4600 Hythane
	faying surface	351 Zinc Lock
Sherwin Williams 2125 Oak Grove Rd. Suite #100 P.O. Box 9011 Walnut Creek, CA 94598	1st	Zinc Clad 2B69V3/B69D11 (shop primer) or Zinc Clad IV B69A8/B69V8 (field primer)
	2nd	Bild and Finish Epoxy B67W1/B67V1
	3rd	Hi-Solids Polyurethane B65W300/ B60V30
	faying surface	Zinc Clad 2B69V3/B69D11
Tnemec Co., Inc. 640 S. Riverside Seattle, WA 98108	1st	90-E-92 Tneme-Zinc (shop primer) or 90-97 Tneme- Zinc (field primer)
	2nd	Series 161 Tneme-Fascure
	3rd	Series 73 Endura Shield III
	faying surface	90-E-92 Tneme-Zinc

The color for the epoxy coating material shall be white. The color for the aliphatic urethane coat shall be *** $$1$$ ***.

Paint formulations to be used on faying surfaces shall be qualified by tests in accordance with "Test Method to Determine the Slip Coefficient for Coatings

Used in Bolted Joints" as adopted by the Research Council on Structural Connections. The coatings shall be Class B with a mean slip coefficient not less than 0.50. Test results and the paint manufacturer's Certificate of Compliance shall be submitted to the Engineer for approval with the structural steel shop plans.

Construction Requirements

Environmental Conditions

Steel surfaces shall be:

1. Greater than 45F and at least 5F above the dew point, and

2. Less than 115F.

Preparation for Shop Coating

A one mil minimum roughened surface profile shall be provided by an approved abrasive procedure.

Care shall be taken to protect freshly coated surfaces from subsequent blast cleaning operations. Blast damaged primed surfaces shall be thoroughly wire brushed or if visible rust occurs, reblasted to a near-white (SSPC-SP10) condition. The wire brushed or blast cleaned surfaces shall be vacuumed and reprimed by spraying.

After being thoroughly cleaned by sandblasting as specified above, all structural steel shall be primed within the same working day on which sandblasting takes place, and before any rust forms, by spraying with a full coat of inorganic zinc silicate paint. High strength field bolts need not be painted before erection.

Shear stud connectors, surfaces embedded in the concrete and contact surfaces of bolted joints shall be painted only with a shop coat of inorganic zinc silicate paint.

The top surfaces of the top flanges of the steel girders shall not be primed until the shear connectors are placed. Surfaces which are inaccessible for painting after erection shall be painted with the two field coats of paint before erection.

Mixing The Coating

The coating shall be mixed with a high shear mixer in accordance with the manufacturer's directions, to a smooth, lump-free consistency. Paddle mixers or paint shakers are not allowed. Mixing shall be done, as far as possible, in the original containers and shall be continued until all of the metallic powder or pigment is in suspension.

Care shall be taken to ensure that all of the coating solids that may have settled to the bottom of the container are thoroughly dispersed. The coating shall then be strained through a screen having openings no larger than those specified for a No. 50 sieve in ASTM E 11. After straining, the mixed coating shall be kept under continuous agitation up to and during the time of application.

Thinning The Coating

In general, the coatings are supplied for use without thinning. If it is necessary to thin the coating for proper application in cool weather, or to obtain better coverage of the urethane coat, the thinning shall be done in accordance with the manufacturer's written recommendations.

Applying The Shop Coating

After the surface to be coated has been cleaned and approved by the Engineer, the primer coat shall be applied so as to produce a uniform even coating bonded with the metal.

The coatings shall be applied with the spray nozzles and pressures recommended by the manufacturer of the paint system, so as to attain the film thicknesses specified.

The faying surfaces of bolted field splices shall be coated with inorganic zinc silicate paint only. This includes all surfaces internal to the connection and all filler plates.

The dry film thickness of the primer coat on the faying surfaces and on the top flanges where the stud shear connectors have been welded shall not be less than 2.5 mils or greater than 3.5 mils. On the stud shear connectors, the minimum dry film thickness for the primer coat shall be 1.0 mil. On all other areas, the minimum dry film thickness for the primer coat shall be 2.5 mils.

The dry film thickness will be determined by the use of a magnetic dry film thickness gage. The gage shall be calibrated on the blasted steel with plastic shims the same thickness as the minimum dry film thickness.

Field Painting After Erection

When the erection work has been completed, including all connections and the straightening of any bent metal, the steel and bolts shall be prepared for painting. All adhering scale, dirt, grease, form oil, or other foreign matter shall be removed by appropriate means and all rusted or uncoated areas including the bolts, nuts, washers and splice plates shall be abrasive blasted to a near-white (SSPC-SP10) condition. All uncoated areas shall be field primed with organic zinc paint.

After all field priming has been completed the surfaces shall be prepared to receive the two field coats. The epoxy intermediate coat shall be mixed and applied per the manufacturer's instructions and the minimum dry film thickness shall be 3.5 mils. The aliphatic urethane top coat shall also be mixed and applied per the manufacturer's instructions and the minimum dry film thickness shall be 1.0 mils. The minimum drying time between coats shall be as shown in the approved product data sheets, but not less than 12 hours. Depending on site conditions, additional time may be required for proper curing before applying succeeding coats. It is the Contractor's responsibility to determine if the coating has cured sufficiently for proper application of succeeding coats. The maximum time between coats shall be in accordance with the manufacturer's written recommendations. If the maximum time between coats is exceeded, all newly coated surfaces shall be completely blast-cleaned again to a near white finish (SSPC-SP10) and recoated at no additional cost to the State.

Temporary attachments or supports for scaffolding or forms shall not damage the coating system. All paint damage that occurs shall be repaired in accordance with the manufacturer's written recommendations and as follows. On bare areas or areas of insufficient primer thickness, the repair shall include the application of the field applied primer system, epoxy coat and the aliphatic urethane paint system. On areas where the primer is at least equal to the minimum required dry film thickness, the repair shall include the application of the epoxy coat and the aliphatic urethane paint system. If any blast cleaning is required in the field it shall be done using an abrasive approved by the Engineer.

Payment

All costs associated with painting shall be paid for in accordance with Section 6-03.5.